

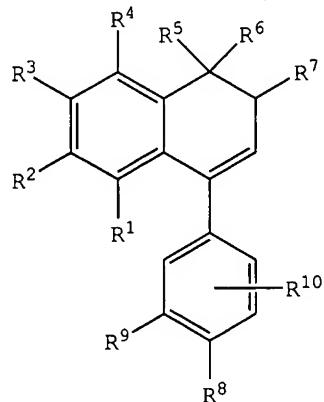
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This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-9 (canceled).

Claim 10 (currently amended): A method for treating a patient having a disorder associated with excessive activation of the α -amino-3-hydroxy-5-methyl-4-isooxazolepropionic acid (AMPA) subtype of the ionotropic excitatory amino acid (EAA) receptors, the method comprising administering to the patient, in an effective amount to alleviate the symptoms of the disorder, a compound of Formula I:



wherein

R^1 , R^2 , R^3 and R^4 are independently
H,
HO,
 $R^{11}O^-$,
halogen (~~F, Cl, Br~~),

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C1-C3-alkyl,
CF₃,
R¹²CO₂-,
R¹²O₂C-,
R¹²CO-,
R¹²CONH-,
R¹²NHCO-,
R¹²NHCO₂-,
R¹²OCONH-,
R¹²O₂S-,
R¹²OS-, or
R¹³R¹⁴N-; or
R¹ and R², or R² and R³, or R³ and R⁴ taken together can be
-SCH₂S-,
-SCH₂O-,
-OCH₂S-,
-SCH₂CH₂S-,
-SCH₂CH₂O-, or
-OCH₂CH₂S-;

wherein at least one of R¹, R², R³ or R⁴ must be a C1-C3-alkylthio group,

R⁵ and R⁶ are independently

H,
C1-C6-alkyl,
C3-C6-alkenyl,
C3-C6-cycloalkyl, or
phenyl or substituted phenyl, wherein the phenyl is substituted with one or two substituents selected from the group consisting of C1-C3-alkyl, halogen {F, Cl, Br}, R¹¹O-, CF₃,

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$R^{12}O_2S-$, $R^{12}OS-$, $R^{12}CO$, $R^{12}CO_2-$, $R^{12}O_2C-$, $R^{12}CONH-$, $R^{12}NHCO-$,
 $R^{12}NHCO_2-$, $R^{12}OCONH-$, and $R^{13}R^{14}N-$; or

R^5 and R^6 taken together can be C3-C6-cycloalkyl;
 R^7 is

$R^{13}R^{14}NCO-$,
 $R^{13}R^{14}NCS-$,
 $R^{13}R^{14}N(CR^{15})-$, $R^{13}R^{14}N(HCR^{15})-$,
 $R^{15}OCO-$,
 $R^{13}CO-$,
 $R^{13}R^{14}NCH_2CO-$,
 $R^{12}O_2C-(CH_2)_n-$,
 $R^{13}R^{14}NCO-(CH_2)_n-$,
 $NC-(CH_2)_n-$,
 H ,
C1-C6-alkyl,
C3-C6-alkenyl, or
C3-C6-cycloalkyl; or

R^6 and R^7 taken together can be

$-(CH_2)_mCH_2(R^{13})NCO-$,
 $-(CH_2)_mCH_2OCO-$, or
 $-(CH_2)_mCH_2CH_2CO-$;

R^8 and R^9 are independently

H ,
 $R^{13}R^{14}N-$,
 $R^{13}R^{14}N(CR^{15})-$, $R^{13}R^{14}N(HCR^{15})-$,
 $R^{12}HNCO-$, or
 $R^{12}CONH-$;

R^{10} is

H ,

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halogen (F , Cl , Br),
 HO ,
 $R^{11}O-$,
 $R^{13}R^{14}N-$,
 $C1-C3$ -alkyl,
 CF_3 ,
 $R^{12}CO_2-$,
 $R^{12}CO-$, or
 $R^{12}CONH-$;
 R^{11} is $C1-C3$ -alkyl;
 R^{12} is H or $C1-C3$ -alkyl;
 R^{13} and R^{14} are independently
 H ,
 $C1-C10$ -alkyl,
 $C1-C6$ -perfluoroalkyl,
 $C3-C10$ -alkenyl, or
 $C3-C6$ -cycloalkyl; or
 R^{13} and R^{14} taken together can be $C3-C6$ -cycloalkyl;
 R^{15} is $C1-C6$ -alkyl, $C3-C6$ -alkenyl, or $C3-C6$ -cycloalkyl;
 n is 1 to 6;
 m is 0 to 2;
and or pharmaceutically acceptable salts thereof;
wherein R^8 and R^9 cannot be both be H ,
in combination with a pharmaceutically acceptable carrier.

Claim 11 (currently amended): The method of claim 10
wherein, in the compound of Formula I, one of four substituents
of R^1 , R^2 , R^3 and R^4 must be $C1-C3$ -alkylthio group, the other

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substituents are independently H, $R^{11}O^-$, $R^{11}S^-$, halogen—(F, Cl, Br), or C1-C3-alkyl;

R^2 and R^3 taken together can be $-SCH_2S-$, SCH_2O^- , or $-OCH_2S^-$;
 R^7 is

$R^{13}R^{14}NCO^-$,
 $R^{13}R^{14}NCS^-$,
 $R^{13}R^{14}N(CR^{15})^-$, $R^{13}R^{14}N(HCR^{15})^-$,
 $R^{15}OCO^-$,
 $R^{13}CO^-$, or
H;

R^8 and R^9 are independently H, H_2N^- or CH_3CONH^- ; and or pharmaceutically acceptable salts thereof.

Claim 12 (original): The method of claim 11 wherein the compound of Formula I is selected from the group consisting of 4-(4-Aminophenyl)-1,2-dihydro-1-methyl-2-ethylcarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-1-methyl-2-n-propylcarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-1-methyl-2-n-butylcarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-2-ethylcarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-2-n-propylcarbamoyl-6-methylthiophthalazine, and 4-(4-Aminophenyl)-1,2-dihydro-2-n-butylcarbamoyl-6-methylthiophthalazine.

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Claim 13 (original): The method of claim 10 wherein the disorder is selected from the group consisting of neurological, neuropsychological, neuropsychiatric, neurodegenerative, neuropsychopharmacological and functional disorders.

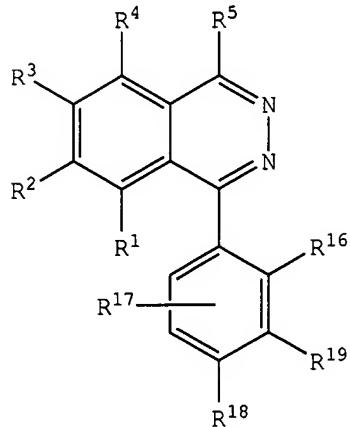
Claim 14 (original): The method of claim 11 wherein the disorder is selected from the group consisting of neurological, neuropsychological, neuropsychiatric, neurodegenerative, neuropsychopharmacological and functional disorders.

Claim 15 (original): The method of claim 12 wherein the disorder is selected from the group consisting of neurological, neuropsychological, neuropsychiatric, neurodegenerative, neuropsychopharmacological and functional disorders.

Claims 16-24 (cancelled).

Claim 25 (currently amended): A method for treating a patient having a disorder associated with excessive activation of the α -amino-3-hydroxy-5-methyl-4-isooxazolepropionic acid (AMPA) subtype of the ionotropic excitatory amino acid (EAA) receptors, the method comprising administering to the patient, in an effective amount to alleviate the symptoms of the disorder, a compound of Formula II:

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wherein

R^1 , R^2 , R^3 and R^4 are independently

H,

HO,

$R^{11}O^-$,

halogen (F , Cl , Br),

Cl -C3-alkyl,

CF_3 ,

$R^{12}CO_2^-$,

$R^{12}O_2C^-$,

$R^{12}CO^-$,

$R^{12}CONH^-$,

$R^{12}NHCO^-$,

$R^{12}NHCO_2^-$,

$R^{12}OCONH^-$,

$R^{12}O_2S^-$,

$R^{12}OS^-$, or

$R^{13}R^{14}N^-$; or

R^1 and R^2 , or R^2 and R^3 , or R^3 and R^4 taken together can be

$-SCH_2S-$,

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$-\text{SCH}_2\text{O}-$,
 $-\text{OCH}_2\text{S}-$,
 $-\text{SCH}_2\text{CH}_2\text{S}-$,
 $-\text{SCH}_2\text{CH}_2\text{O}-$, or
 $-\text{OCH}_2\text{CH}_2\text{S}-$;

wherein at least one of R^1 , R^2 , R^3 or R^4 must be a C1-C3-alkylthio group;

R^5 is

H ,
C1-C6-alkyl,
C3-C6-alkenyl,
C3-C6-cycloalkyl,

phenyl or substituted phenyl, wherein the phenyl is substituted with one or two substituents selected from the group consisting of C1-C3-alkyl, halogen { F , Cl , Br }, $\text{R}^{11}\text{O}-$, CF_3- , $\text{R}^{12}\text{O}_2\text{S}-$, $\text{R}^{12}\text{OS}-$, R^{12}CO , $\text{R}^{12}\text{CO}_2-$, $\text{R}^{12}\text{O}_2\text{C}-$, $\text{R}^{12}\text{CONH}-$, $\text{R}^{12}\text{NHCO}-$, $\text{R}^{12}\text{NHCO}_2-$, $\text{R}^{12}\text{OCONH}-$, or $\text{R}^{13}\text{R}^{14}\text{N}-$;

R^{11} is C1-C3-alkyl;

R^{12} is H or C1-C3-alkyl;

R^{13} and R^{14} are independently

H ,
C1-C10-alkyl,
C1-C6-perfluoroalkyl,
C3-C10-alkenyl, or
C3-C6-cycloalkyl; or

R^{13} and R^{14} taken together can be C3-C6-cycloalkyl;

R^{15} is C1-C6-alkyl, C3-C6-alkenyl, or C3-C6-cycloalkyl;

R^{16} and R^{17} are independently

H ,

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halogen (~~F, Cl, Br~~),
C1-C3-alkyl,
 $R^{12}O^-$,
 CF_3^- , or
 $R^{12}CO_2^-$;

R^{18} and R^{19} are independently

H,
 $R^{13}R^{14}N^-$,
 $R^{13}HNC(NH)^-$, or
 $R^{12}CONH^-$;

and or pharmaceutically acceptable salts thereof;

wherein R^{18} and R^{19} cannot both be H,

in combination with a pharmaceutically acceptable carrier.

Claim 26 (currently amended): The method of claim 25 wherein, in the compound of Formula II, one of four substituents of R^1 , R^2 , R^3 and R^4 must be a C1-C3-alkylthio group, the other substituents are independently H, $R^{11}O^-$, $R^{11}S^-$, halogen (~~F, Cl, Br~~), or C1-C3-alkyl;

R^2 and R^3 taken together can be $-SCH_2S^-$, $-SCH_2O^-$, or $-OCH_2S^-$;

R^{18} and R^{19} are independently H, H_2N^- , or CH_3CONH^- ; and or pharmaceutically acceptable salts thereof.

Claim 27 (original): The method of claim 26 wherein the compound of Formula II is selected from the group consisting of 1-(4-Aminophenyl)-6-methylthiophthalazine, 1-(4-Acetylaminophenyl)-6-methylthiophthalazine, 1-(4-Aminophenyl)-7-methylthiophthalazine, 1-(4-Aminophenyl)-4-methyl-6-methylthiophthalazine, 1-(4-Acetylaminophenyl)-4-methyl-6-methylthiophthalazine, 1-(4-Aminophenyl)-4-methyl-7-

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methylthiophthalazine, 1-(4-Acetylaminophenyl)-4-methyl-7-methylthiophthalazine.

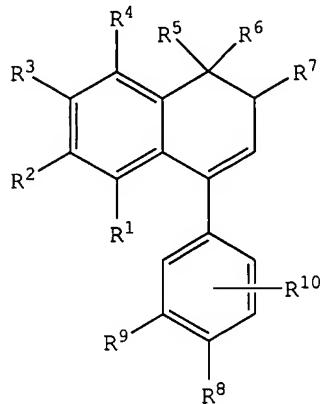
Claim 28 (original): The method of claim 25 wherein the disorder is selected from the group consisting of neurological, neuropsychological, neuropsychiatric, neurodegenerative, neuropsychopharmacological and functional disorders.

Claim 29 (original): The method of claim 26 wherein the disorder is selected from the group consisting of neurological, neuropsychological, neuropsychiatric, neurodegenerative, neuropsychopharmacological and functional disorders.

Claim 30 (original): The method of claim 27 wherein the disorder is selected from the group consisting of neurological, neuropsychological, neuropsychiatric, neurodegenerative, neuropsychopharmacological and functional disorders.

Claim 31 (new): A method for decreasing the excessive flux of ions through an α -amino-3-hydroxy-5-methyl-4-isooxazolepropionic acid (AMPA) subtype of the ionotropic excitatory amino acid (EAA) receptors, the method comprising contacting a cortical cell with an effective amount of a compound of Formula I:

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wherein

R^1 , R^2 , R^3 and R^4 are independently

H ,

HO ,

$R^{11}O^-$,

halogen,

C1-C3-alkyl,

CF_3 ,

$R^{12}CO_2^-$,

$R^{12}O_2C^-$,

$R^{12}CO^-$,

$R^{12}CONH^-$,

$R^{12}NHCO^-$,

$R^{12}NHCO_2^-$,

$R^{12}OCONH^-$,

$R^{12}O_2S^-$,

$R^{12}OS^-$, or

$R^{13}R^{14}N^-$; or

R^1 and R^2 , or R^2 and R^3 , or R^3 and R^4 taken together can be

$-SCH_2S-$,

$-SCH_2O-$,

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-OCH₂S-,
-SCH₂CH₂S-,
-SCH₂CH₂O-, or
-OCH₂CH₂S-;

wherein at least one of R¹, R², R³ or R⁴ must be a C1-C3-alkylthio group,

R⁵ and R⁶ are independently

H,
C1-C6-alkyl,
C3-C6-alkenyl,
C3-C6-cycloalkyl, or

phenyl or substituted phenyl, wherein the phenyl is substituted with one or two substituents selected from the group consisting of C1-C3-alkyl, halogen (F, Cl, Br), R¹¹O-, CF₃, R¹²O₂S-, R¹²OS-, R¹²CO, R¹²CO₂-, R¹²O₂C-, R¹²CONH-, R¹²NHCO-, R¹²NHCO₂-, R¹²OCONH-, and R¹³R¹⁴N-; or

R⁵ and R⁶ taken together can be C3-C6-cycloalkyl;

R⁷ is

R¹³R¹⁴NCO-
R¹³R¹⁴NCS-
R¹³R¹⁴N(HCR¹⁵)-
R¹⁵OCO-
R¹³CO-
R¹³R¹⁴NCH₂CO-
R¹²O₂C-(CH₂)_n-
R¹³R¹⁴NCO-(CH₂)_n-
NC-(CH₂)_n-
H,
C1-C6-alkyl,

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C3-C6-alkenyl, or

C3-C6-cycloalkyl; or

R⁶ and R⁷ taken together can be

-(CH₂)_mCH₂(R¹³)NCO-,

-(CH₂)_mCH₂OCO-, or

-(CH₂)_mCH₂CH₂CO-;

R⁸ and R⁹ are independently

H,

R¹³R¹⁴N-,

R¹³R¹⁴N(HCR¹⁵)-,

R¹²HNCO-, or

R¹²CONH-;

R¹⁰ is

H,

halogen,

HO,

R¹¹O-,

R¹³R¹⁴N-,

C1-C3-alkyl,

CF₃,

R¹²CO₂-,

R¹²CO-, or

R¹²CONH-;

R¹¹ is C1-C3-alkyl;

R¹² is H or C1-C3-alkyl;

R¹³ and R¹⁴ are independently

H,

C1-C10-alkyl,

C1-C6-perfluoroalkyl,

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C3-C10-alkenyl, or
C3-C6-cycloalkyl; or
 R^{13} and R^{14} taken together can be C3-C6-cycloalkyl;
 R^{15} is C1-C6-alkyl, C3-C6-alkenyl, or C3-C6-cycloalkyl;
n is 1 to 6;
m is 0 to 2;
or pharmaceutically acceptable salts thereof;
wherein R^8 and R^9 cannot be both be H,
in combination with a pharmaceutically acceptable carrier
so that the excessive flux of ions through the AMPA receptor
is decreased.

Claim 32 (new): The method of claim 31 wherein, in the compound of Formula I, one of four substituents of R^1 , R^2 , R^3 and R^4 must be C1-C3-alkylthio group, the other substituents are independently H, $R^{11}O^-$, $R^{11}S^-$, halogen or C1-C3-alkyl;

R^2 and R^3 taken together can be $-SCH_2S-$, SCH_2O^- , or $-OCH_2S^-$;
 R^7 is

$R^{13}R^{14}NCO^-$,
 $R^{13}R^{14}NCS^-$,
 $R^{13}R^{14}N(HCR^{15})^-$,
 $R^{15}OCO^-$,
 $R^{13}CO^-$, or
H;

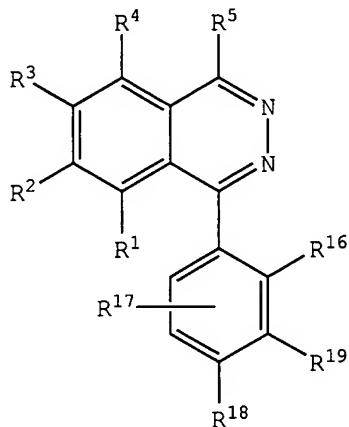
R^8 and R^9 are independently H, H_2N^- or CH_3CONH^- ; or
pharmaceutically acceptable salts thereof.

Claim 33 (new): The method of claim 32 wherein the compound of Formula I is selected from the group consisting of

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4-(4-Aminophenyl)-1,2-dihydro-1-methyl-2-ethylcarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-1-methyl-2-n-propylcarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-1-methyl-2-n-butylicarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-2-ethylcarbamoyl-6-methylthiophthalazine, 4-(4-Aminophenyl)-1,2-dihydro-2-n-propylcarbamoyl-6-methylthiophthalazine, and 4-(4-Aminophenyl)-1,2-dihydro-2-n-butylicarbamoyl-6-methylthiophthalazine.

Claim 34 (new): A method for decreasing the excessive flux of ions through an α -amino-3-hydroxy-5-methyl-4-isooxazolepropionic acid (AMPA) subtype of the ionotropic excitatory amino acid (EAA) receptors, the method comprising contacting a cortical cell with an effective amount of a compound of Formula II:



wherein

R¹, R², R³ and R⁴ are independently
H,
HO,
R¹¹O-,

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halogen,
C1-C3-alkyl,
CF₃,
R¹²CO₂-,
R¹²O₂C-,
R¹²CO-,
R¹²CONH-,
R¹²NHCO-,
R¹²NHCO₂-,
R¹²OCONH-,
R¹²O₂S-,
R¹²OS-, or
R¹³R¹⁴N-; or

R¹ and R², or R² and R³, or R³ and R⁴ taken together can be

-SCH₂S-,
-SCH₂O-,
-OCH₂S-,
-SCH₂CH₂S-,
-SCH₂CH₂O-, or
-OCH₂CH₂S-;

wherein at least one of R¹, R², R³ or R⁴ must be a C1-C3-alkylthio group;

R⁵ is

H,
C1-C6-alkyl,
C3-C6-alkenyl,
C3-C6-cycloalkyl,

phenyl or substituted phenyl, wherein the phenyl is substituted with one or two substituents selected from the group

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consisting of C1-C3-alkyl, halogen, $R^{11}O^-$, CF_3^- , $R^{12}O_2S^-$, $R^{12}OS^-$, $R^{12}CO$, $R^{12}CO_2^-$, $R^{12}O_2C^-$, $R^{12}CONH^-$, $R^{12}NHCO^-$, $R^{12}NHCO_2^-$, $R^{12}OCONH^-$, or $R^{13}R^{14}N^-$;

R^{11} is C1-C3-alkyl;

R^{12} is H or C1-C3-alkyl;

R^{13} and R^{14} are independently

H,

C1-C10-alkyl,

C1-C6-perfluoroalkyl,

C3-C10-alkenyl, or

C3-C6-cycloalkyl; or

R^{13} and R^{14} taken together can be C3-C6-cycloalkyl;

R^{15} is C1-C6-alkyl, C3-C6-alkenyl, or C3-C6-cycloalkyl;

R^{16} and R^{17} are independently

H,

halogen,

C1-C3-alkyl,

$R^{12}O^-$,

CF_3^- , or

$R^{12}CO_2^-$;

R^{18} and R^{19} are independently

H,

$R^{13}R^{14}N^-$,

$R^{13}HNC(NH)^-$, or

$R^{12}CONH^-$;

or pharmaceutically acceptable salts thereof;

wherein R^{18} and R^{19} cannot both be H,

in combination with a pharmaceutically acceptable carrier

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so that the excessive flux of ions through the AMPA receptor is decreased.

Claim 35 (new): The method of claim 34 wherein, in the compound of Formula II, one of four substituents of R^1 , R^2 , R^3 and R^4 must be a C1-C3-alkylthio group, the other substituents are independently H, $R^{11}O^-$, $R^{11}S^-$, halogen, or C1-C3-alkyl;

R^2 and R^3 taken together can be $-SCH_2S^-$, $-SCH_2O^-$, or $-OCH_2S^-$;

R^{18} and R^{19} are independently H, H_2N^- , or CH_3CONH^- ; or pharmaceutically acceptable salts thereof.

Claim 36 (new): The method of claim 35 wherein the compound of Formula II is selected from the group consisting of 1-(4-Aminophenyl)-6-methylthiophthalazine, 1-(4-Acetylaminophenyl)-6-methylthiophthalazine, 1-(4-Aminophenyl)-7-methylthiophthalazine, 1-(4-Aminophenyl)-4-methyl-6-methylthiophthalazine, 1-(4-Acetylaminophenyl)-4-methyl-6-methylthiophthalazine, 1-(4-Aminophenyl)-4-methyl-7-methylthiophthalazine, 1-(4-Acetylaminophenyl)-4-methyl-7-methylthiophthalazine.

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Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 1.
This sheet of Figure 1, replaces the original sheet of Figure 1.